

وَقُلْ رَبِّ زِدْنِي عِلْمًا



RESPIRATORY SYSTEM

HAYAT BATCH

SUBJECT : Anatomy Lab

LEC NO. : 1

DONE BY : Dana khalaf

<http://www.medclubhu.weebly.com/>



Respiratory system practical

By
Dr. Mohamed Fathi
Ass. Prof. OF Anatomy

Anatomy Lab 1:

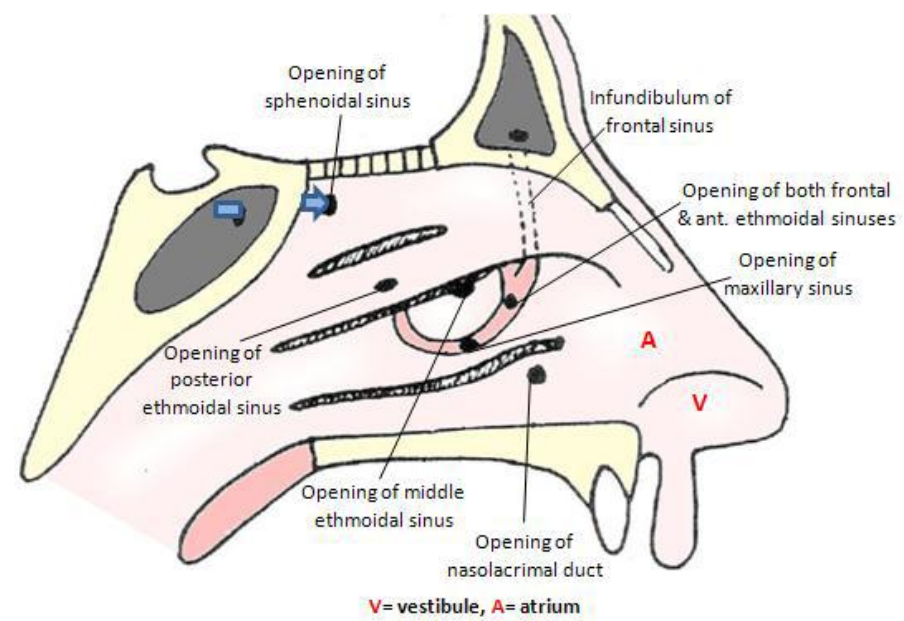
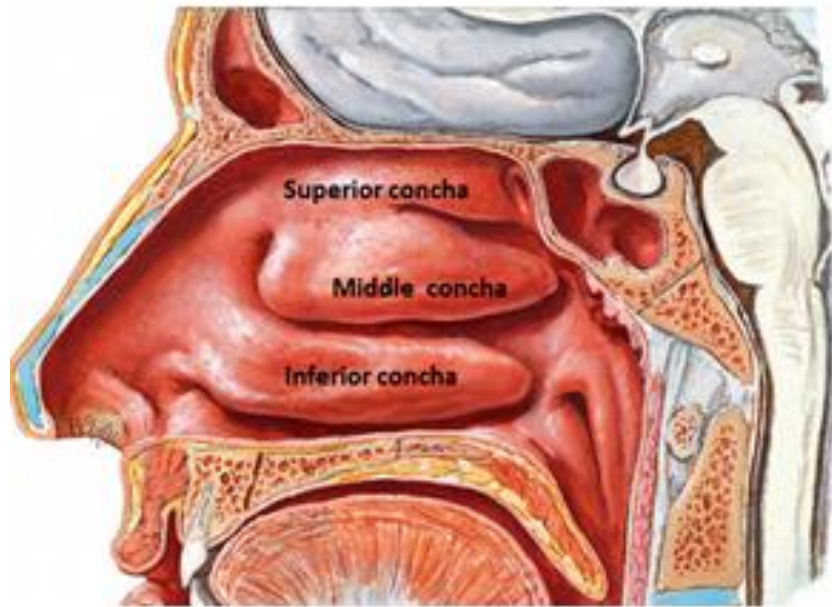
***Nose & paranasal
sinuses**

***Larynx**

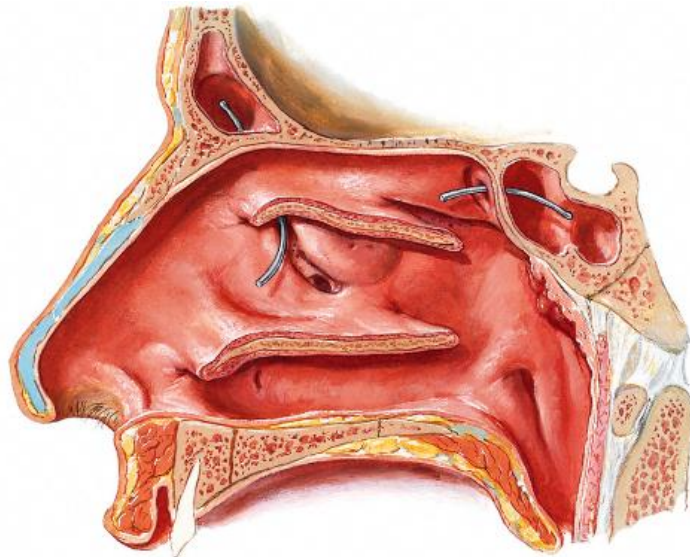
***Pharynx**

***Trachea**

***Bronchi**



Lateral wall of the nose
لوجود ال concha



- Lat. wall presents:

1- Sup. Concha.

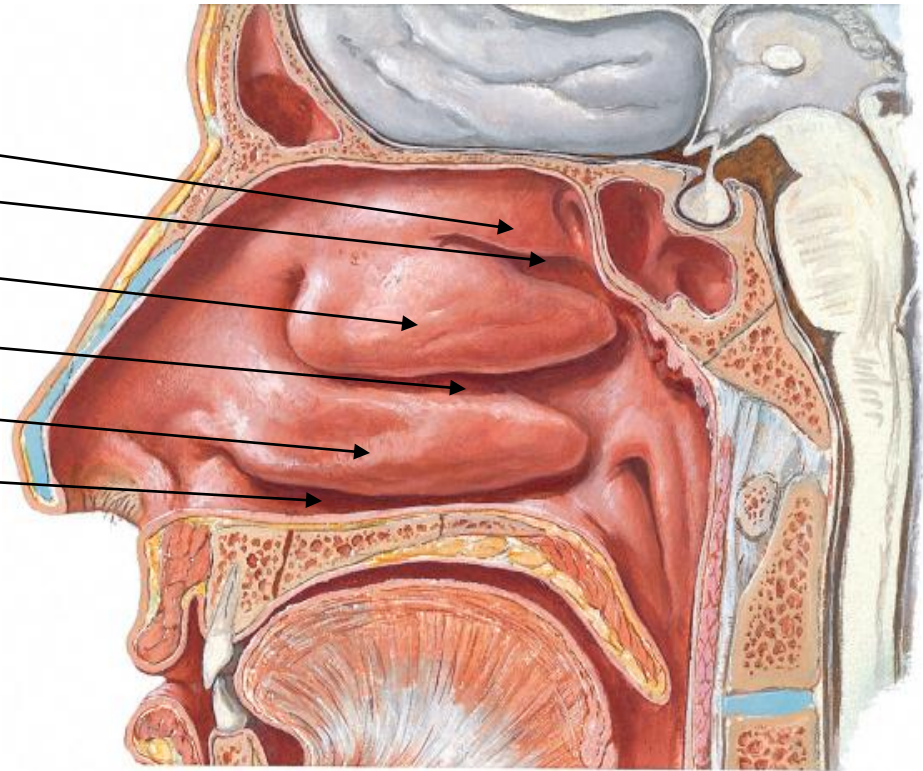
2- Sup. Meatus.

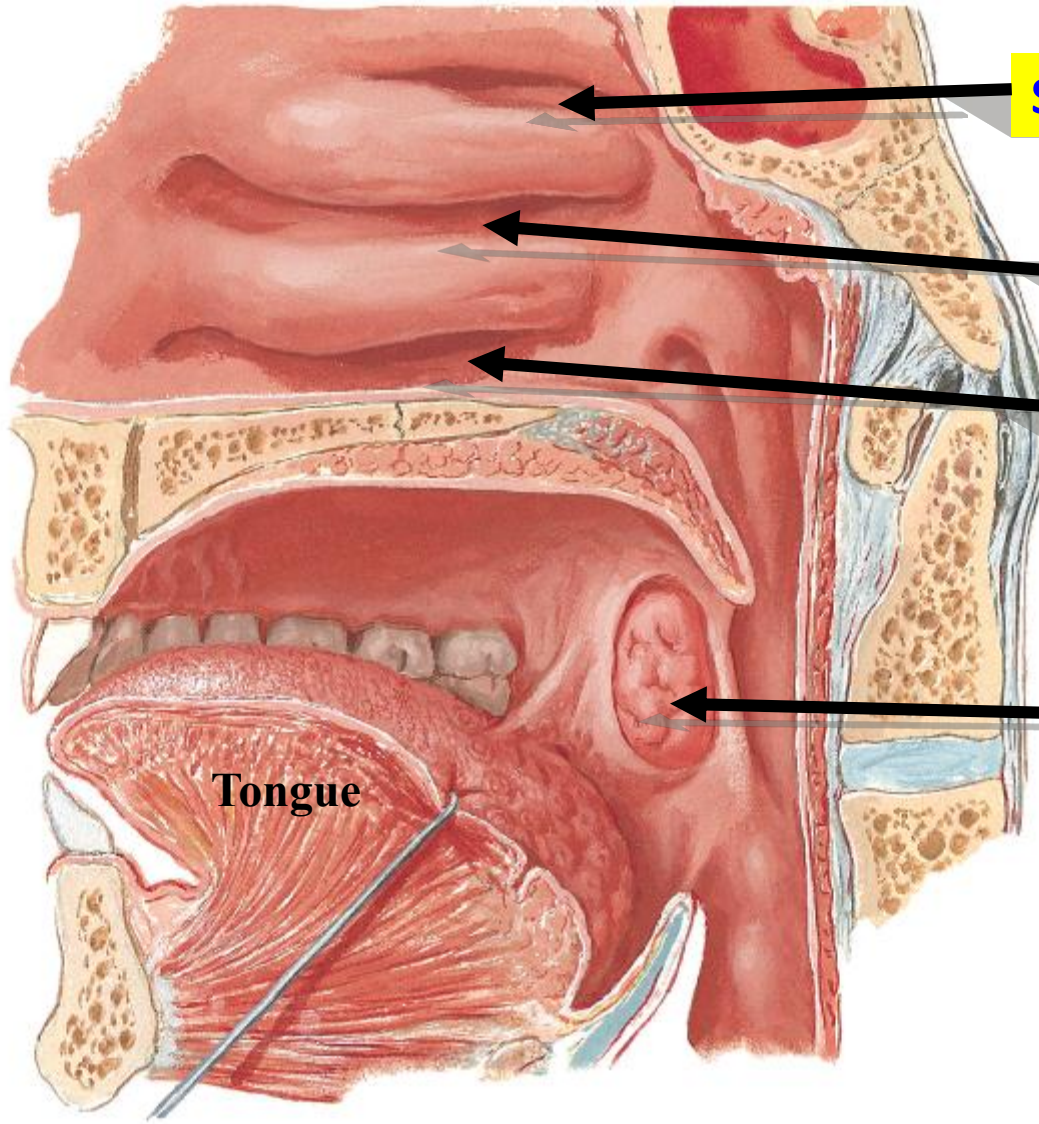
3- Middle concha.

4- Middle meatus.

5- Inf. Concha.

6- Inf. Meatus.





Superior meatus

Middle meatus

Inferior meatus

Palatine tonsil

Tongue

اهم structure موجود جوا

Medial wall of the nose :

Frontal air sinus

Sphenoidal air sinus

Nasal septum

Auditory tube

Hard palate

Soft palate

Tongue

اول cartilage من ال cartilage ال larynx

Epiglottis

Vestibular fold

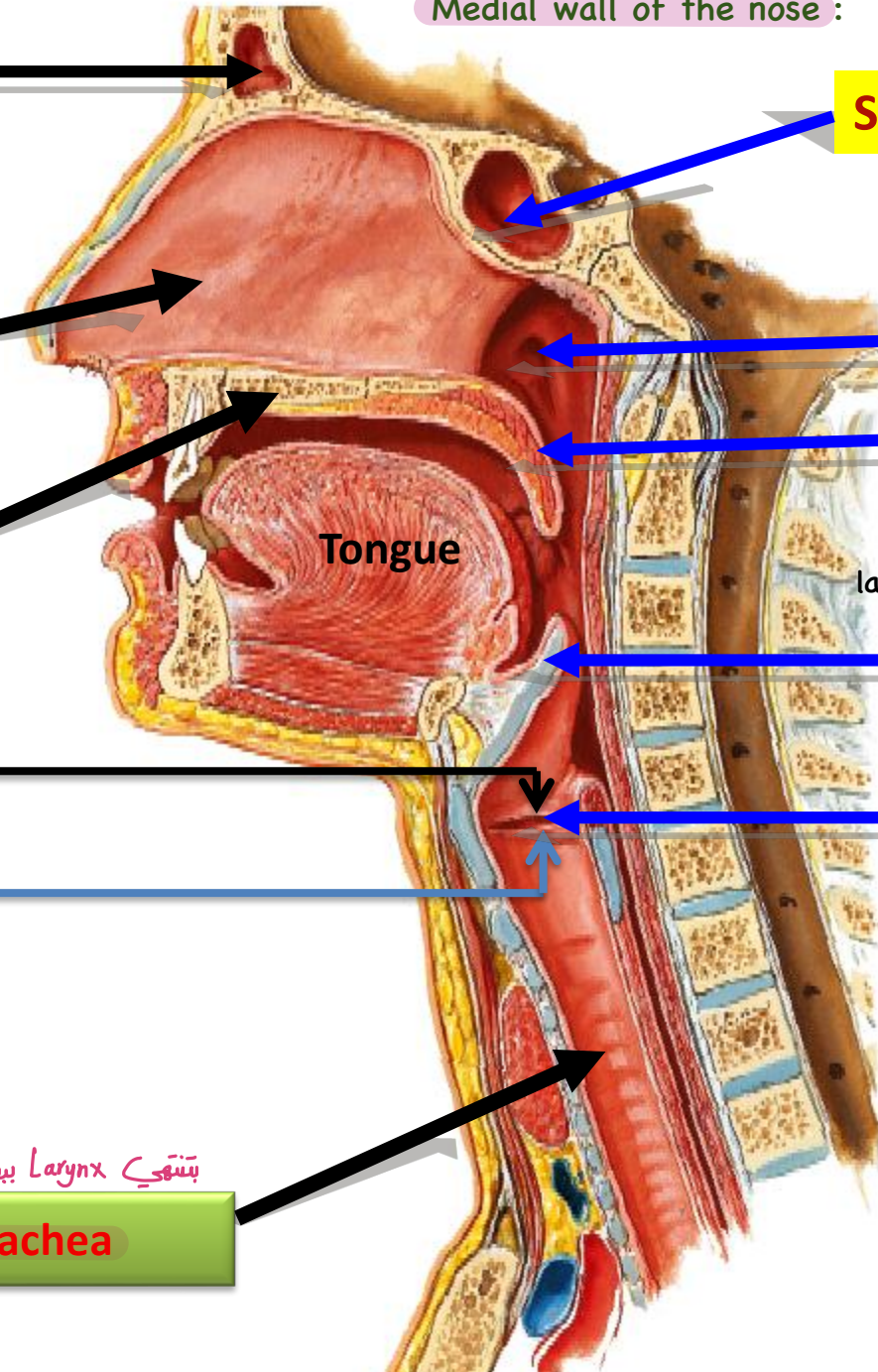
Sinus of the larynx

فolds

True vocal folds

بنتهي لarynx بيديها

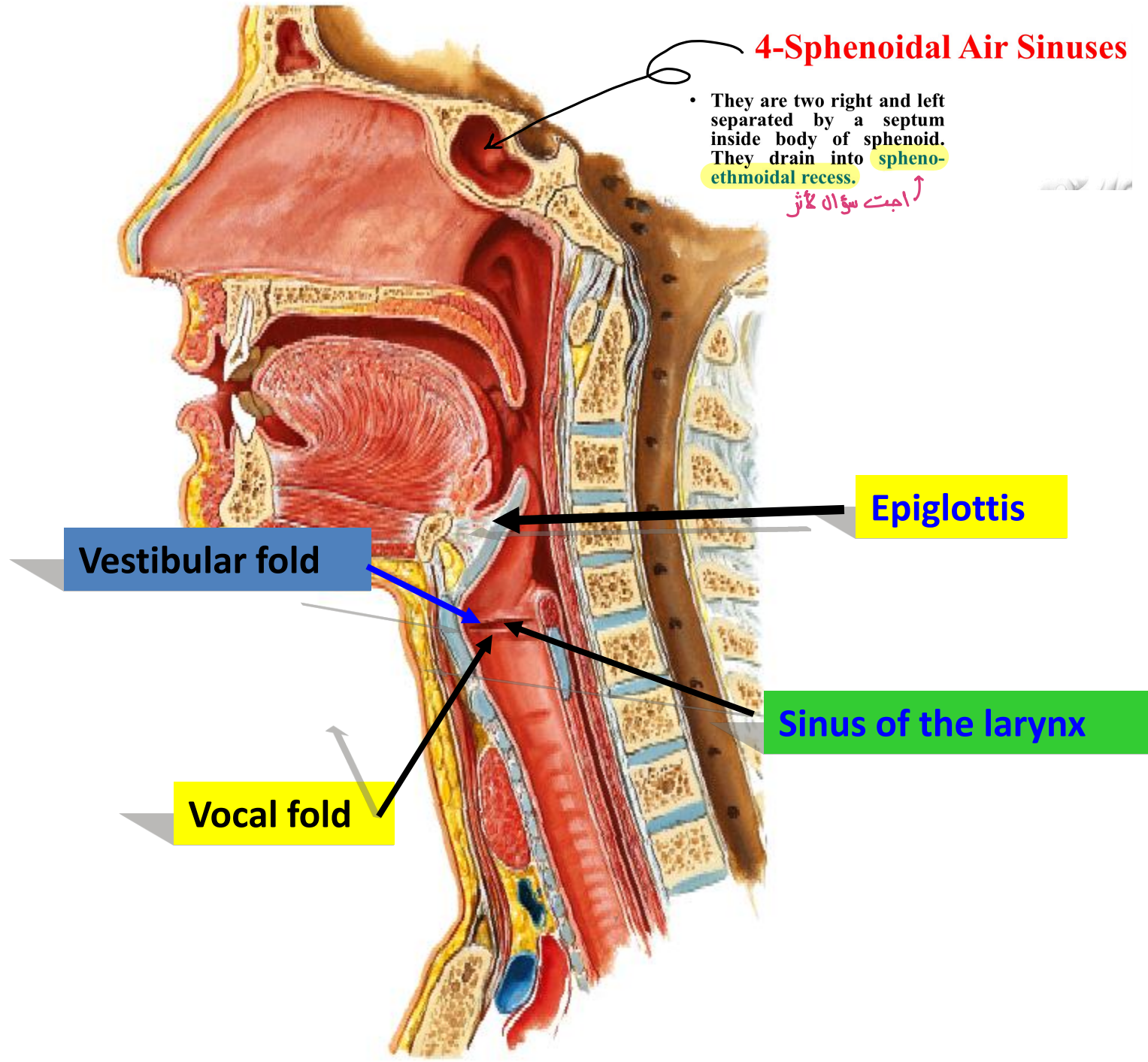
Trachea



4-Sphenoidal Air Sinuses

- They are two right and left separated by a septum inside body of sphenoid. They drain into sphenothmoidal recess.

اجبتے سواہ لائز

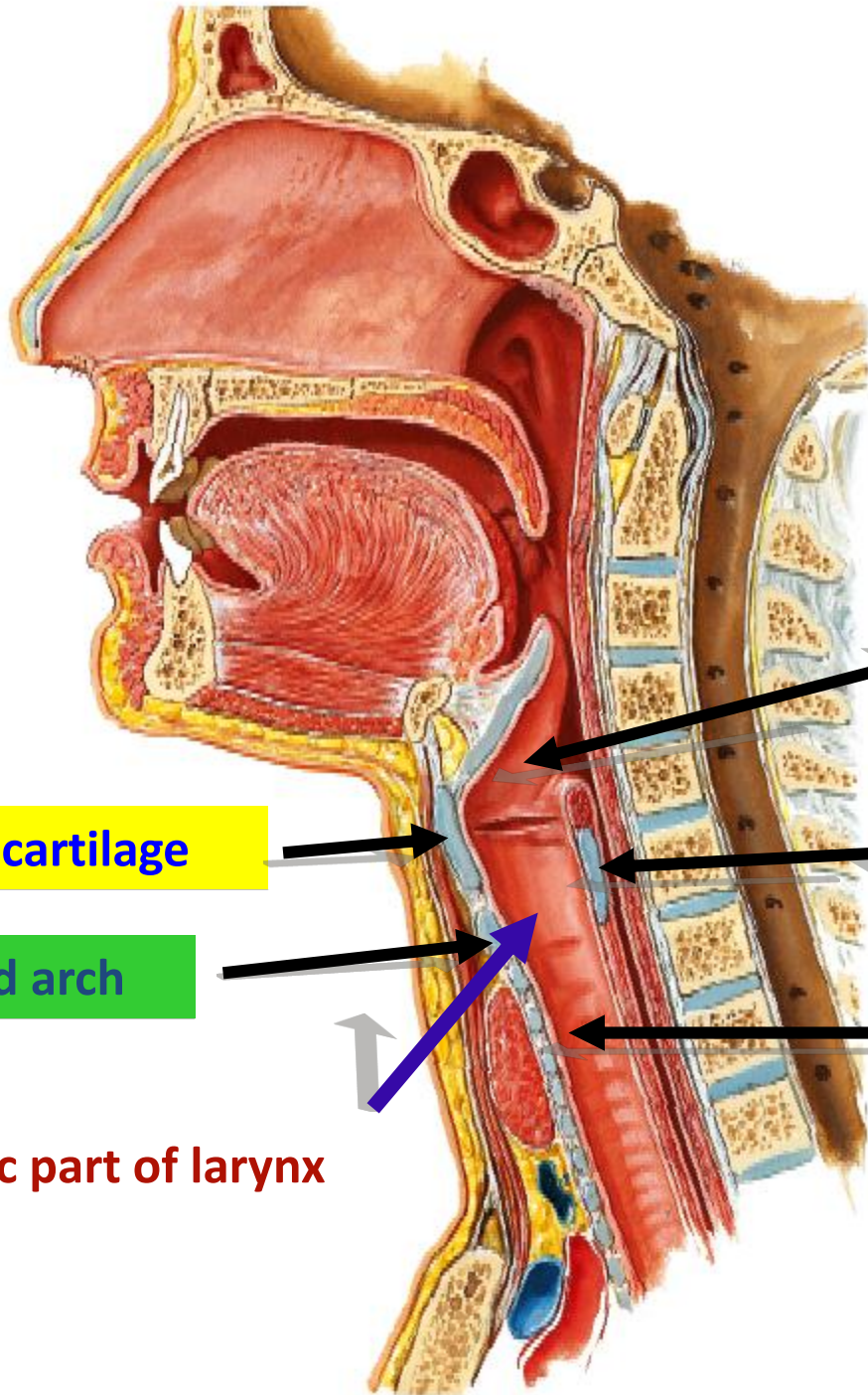


Vestibular fold

Epiglottis

Vocal fold

Sinus of the larynx



Vestibule of the larynx

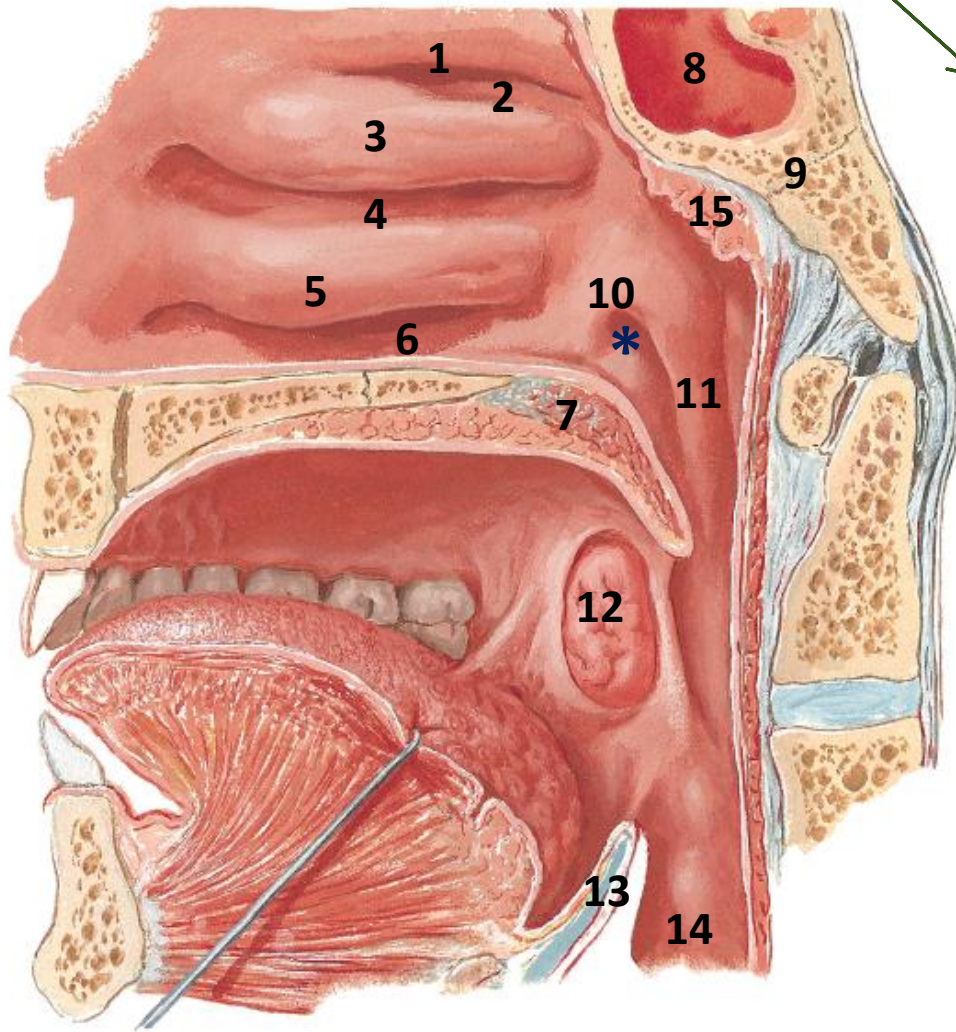
Thyroid cartilage

Cricoid arch

Cricoid Lamina

Trachea

Infraglottic part of larynx



- 1- superior concha
- 2- superior meatus
- 3- middle concha
- 4- middle meatus
- 5- inferior concha
- 6- inferior meatus
- 7- soft palate
- 8- sphenoid air sinus
- 9- body of sphenoid
- 10- tubal elevation
- * ^{أفوقها} pharyngeal opening of auditory tube
- 11- salpingopharyngeal fold
- 12- palatine tonsil
- 13- epiglottis
- 14- laryngeopharynx
- 15- nasopharyngeal tonsil

1-nasal septum

2-hard palate

3- soft palate

4-tongue

5-nasopharnx

6-oropharnx

contains

Palatine tonsils

7-Epiglotis

8-laryngopharnx

9-trachea

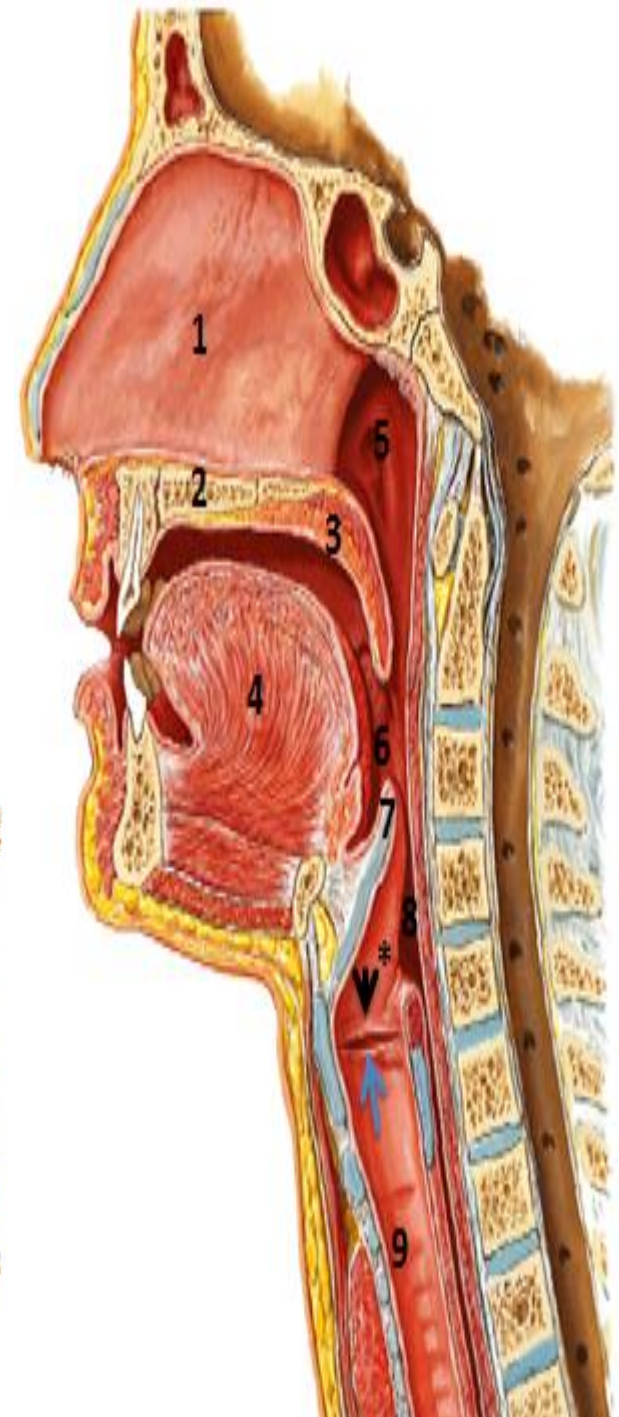
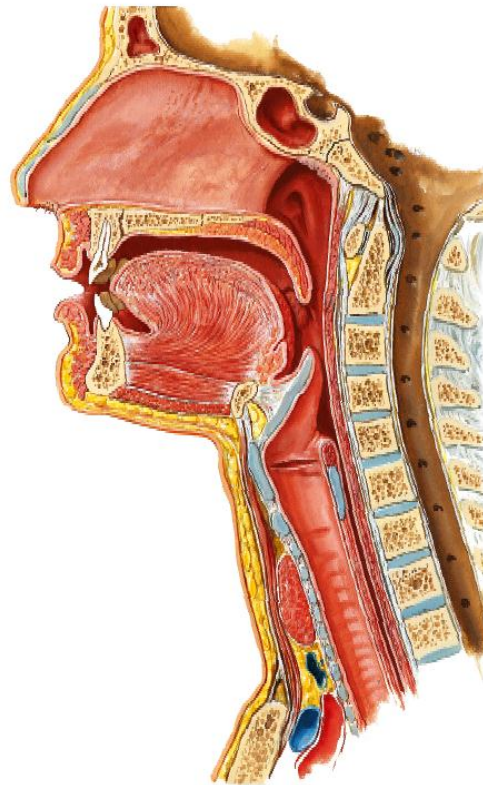
***= laryngeal inlet (laryngeal cavity)**

Black arrow:

vestibular fold

Blue arrow:

true vocal folds



1- superior concha

2-middle concha

3-inferior concha

Blue Arrow: superior meatus

Green Arrow: middle meatus

Orange Arrow: inferior meatus

4- hard palate

5- soft palate

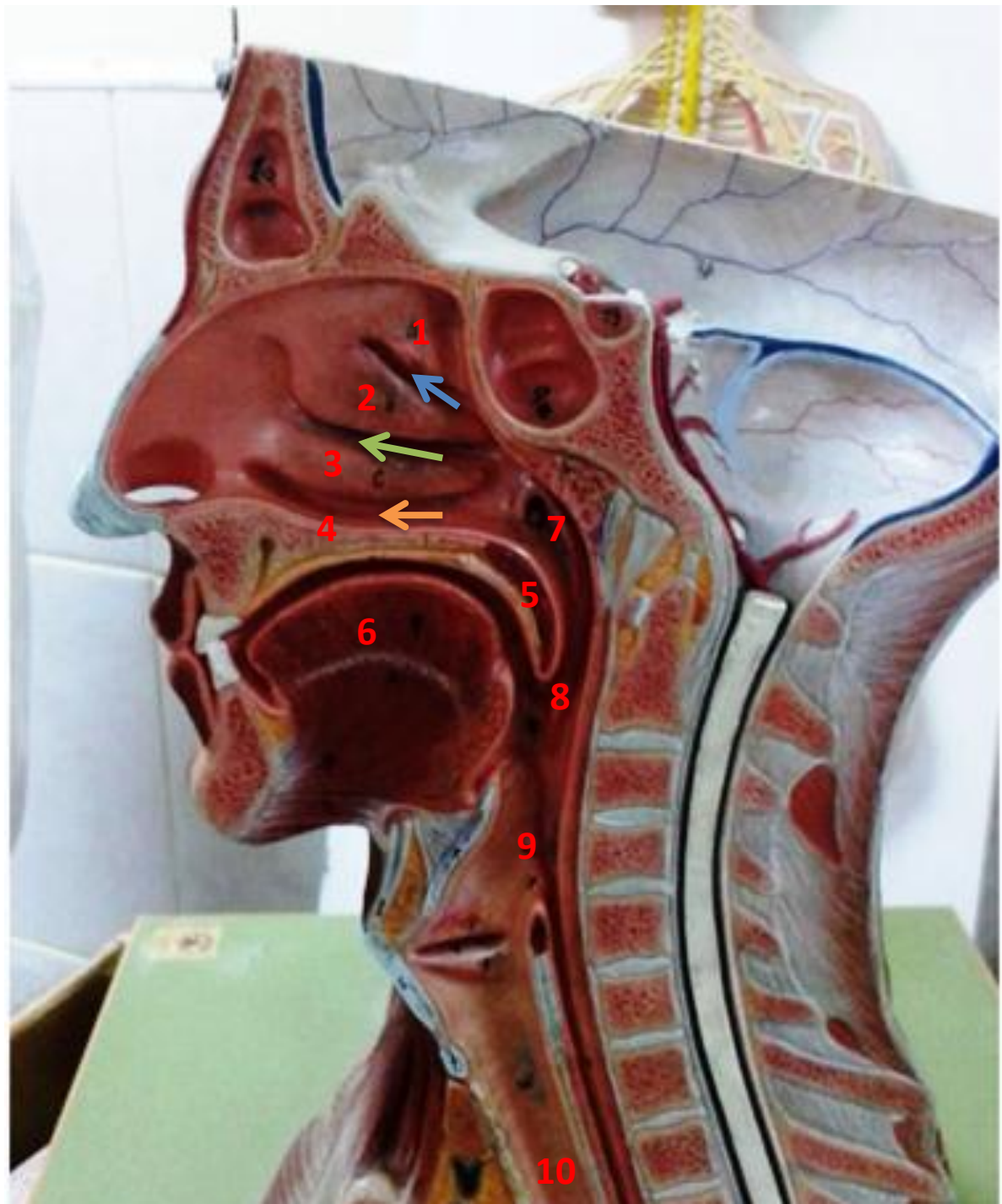
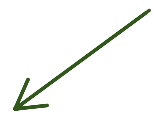
6- tongue

7-nasopharnx

8-oropharnx

9-laryngeal inlet

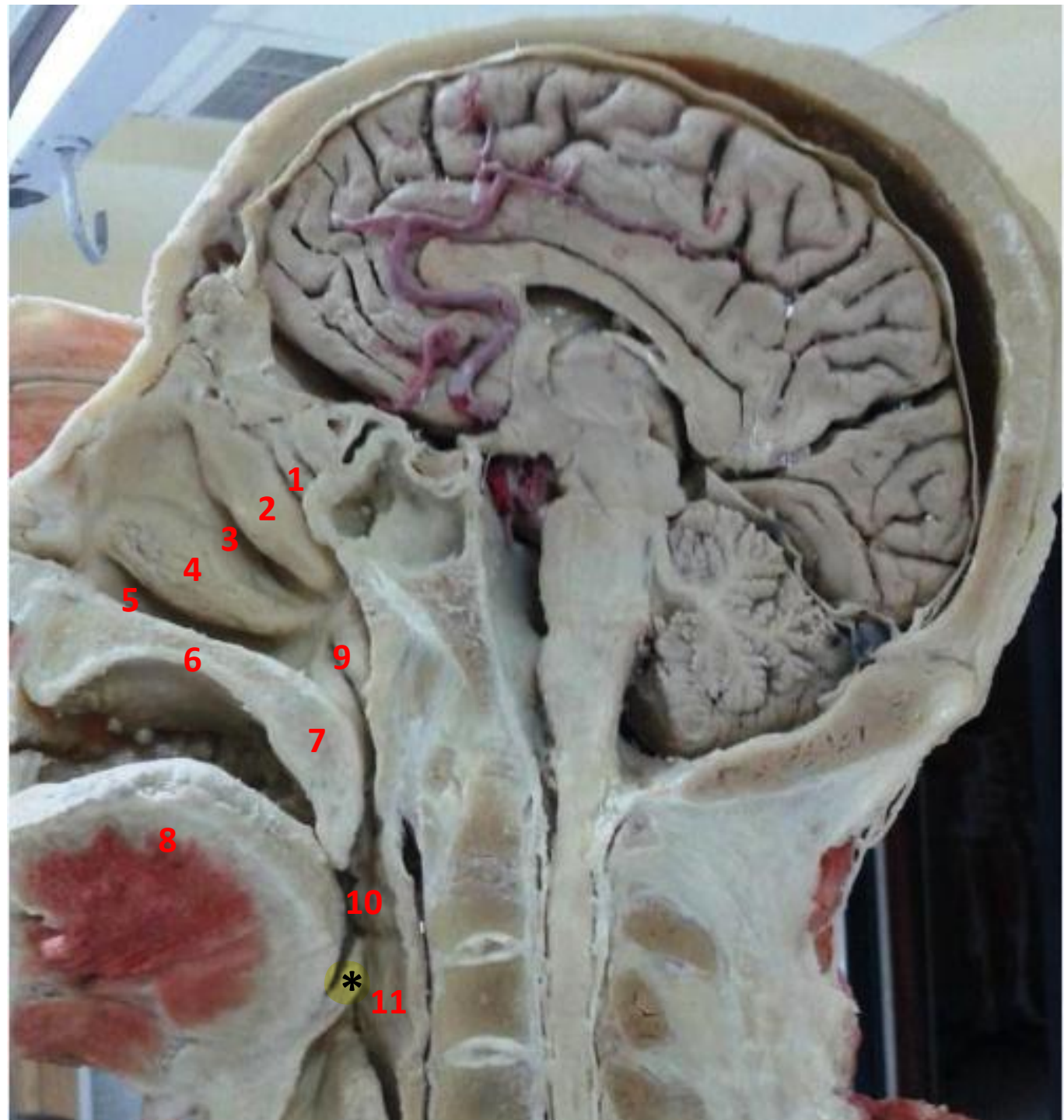
10-trachea

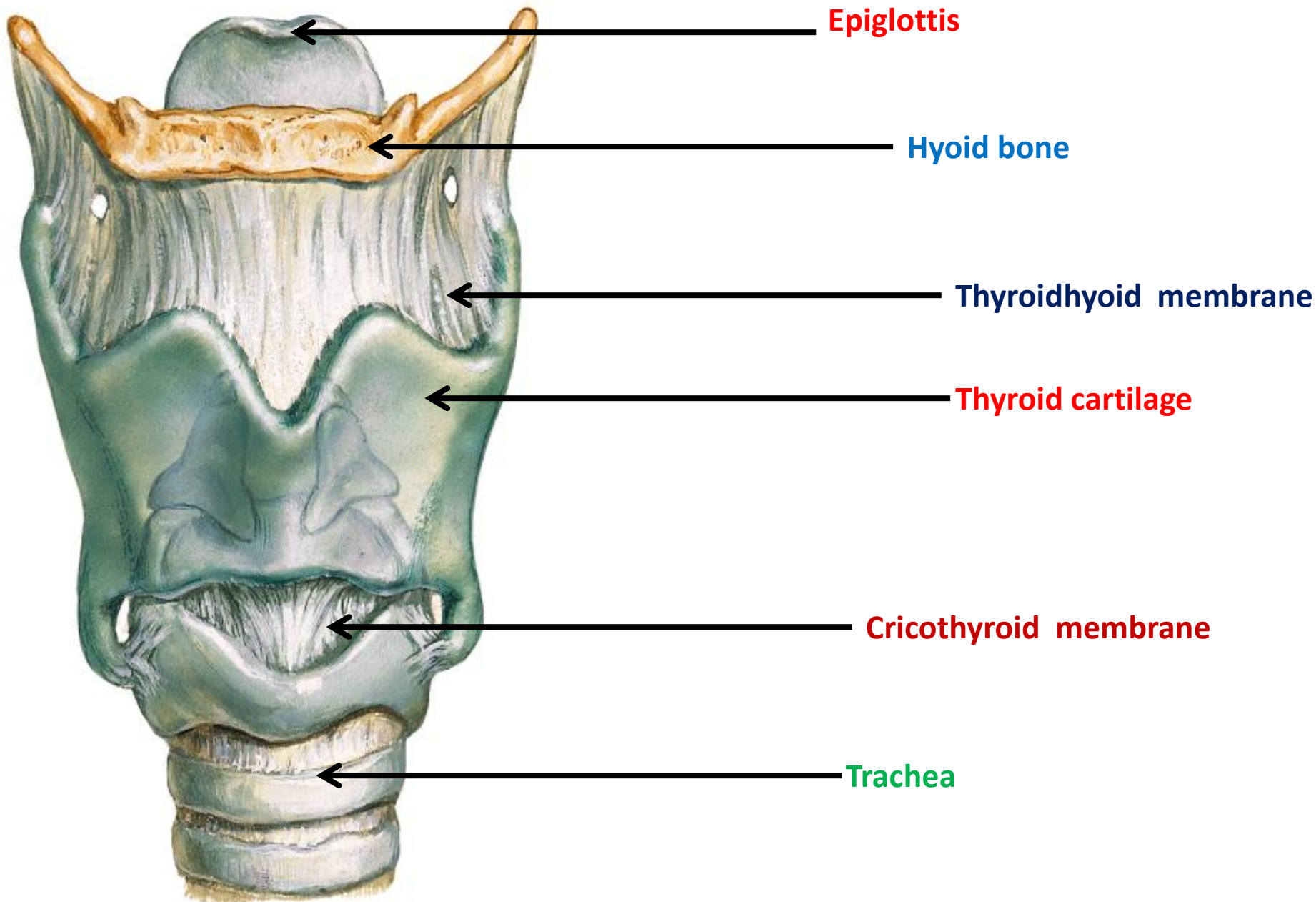


- 1-superior concha
- 2-middle concha
- 3- middle meatus
- 4-inferior concha
- 5-inferior meatus
- 6-hard palate
- 7-soft palate
- 8-tongue
- 9-nasopharynx
- 10-oropharynx
- 11-laryngopharynx

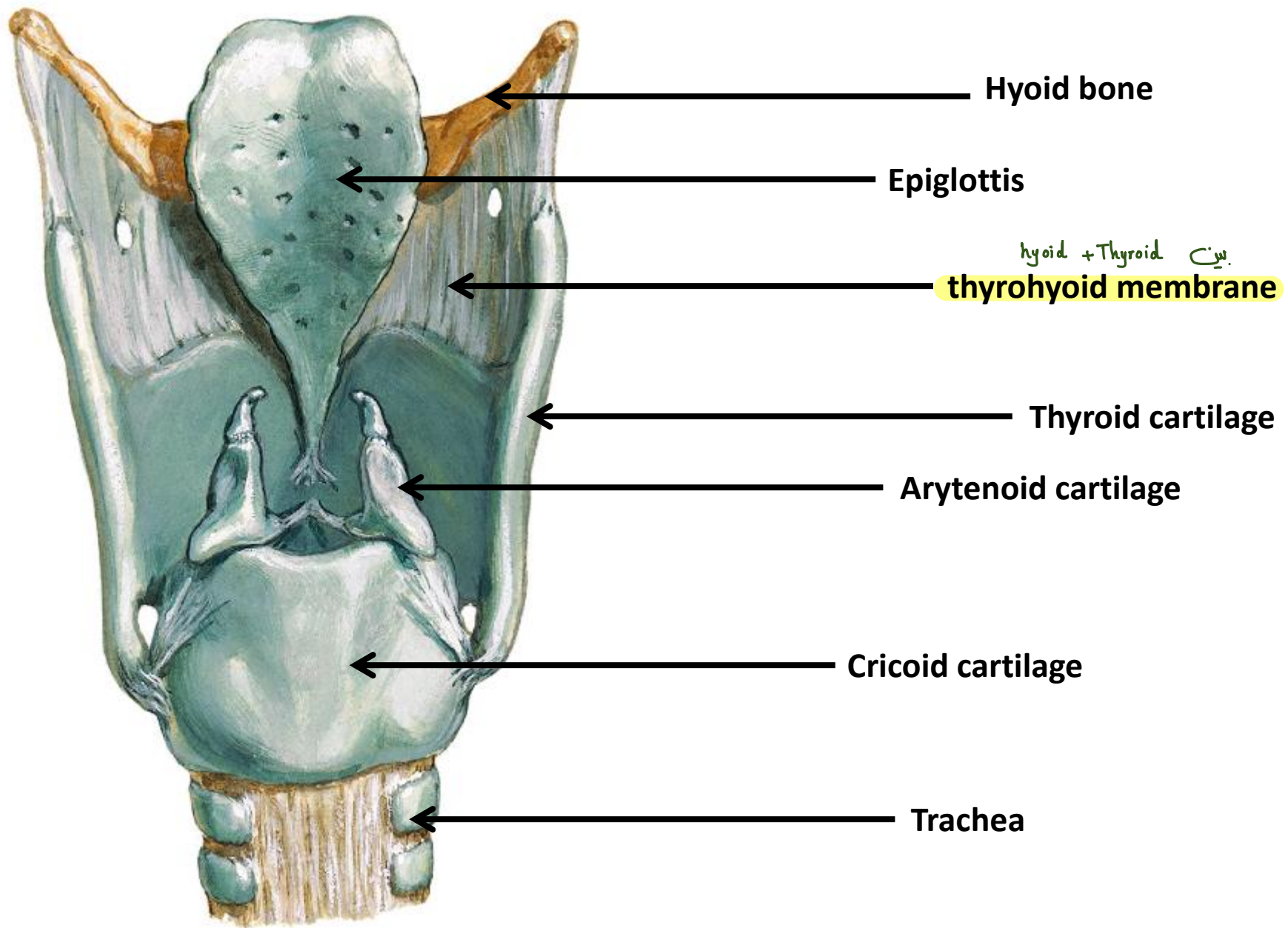
*= epiglottis

لسان ورا الـ Tongue





Anterior view larynx and trachea



Hyoid bone

Epiglottis

hyoid + Thyroid C.w.
thyrohyoid membrane

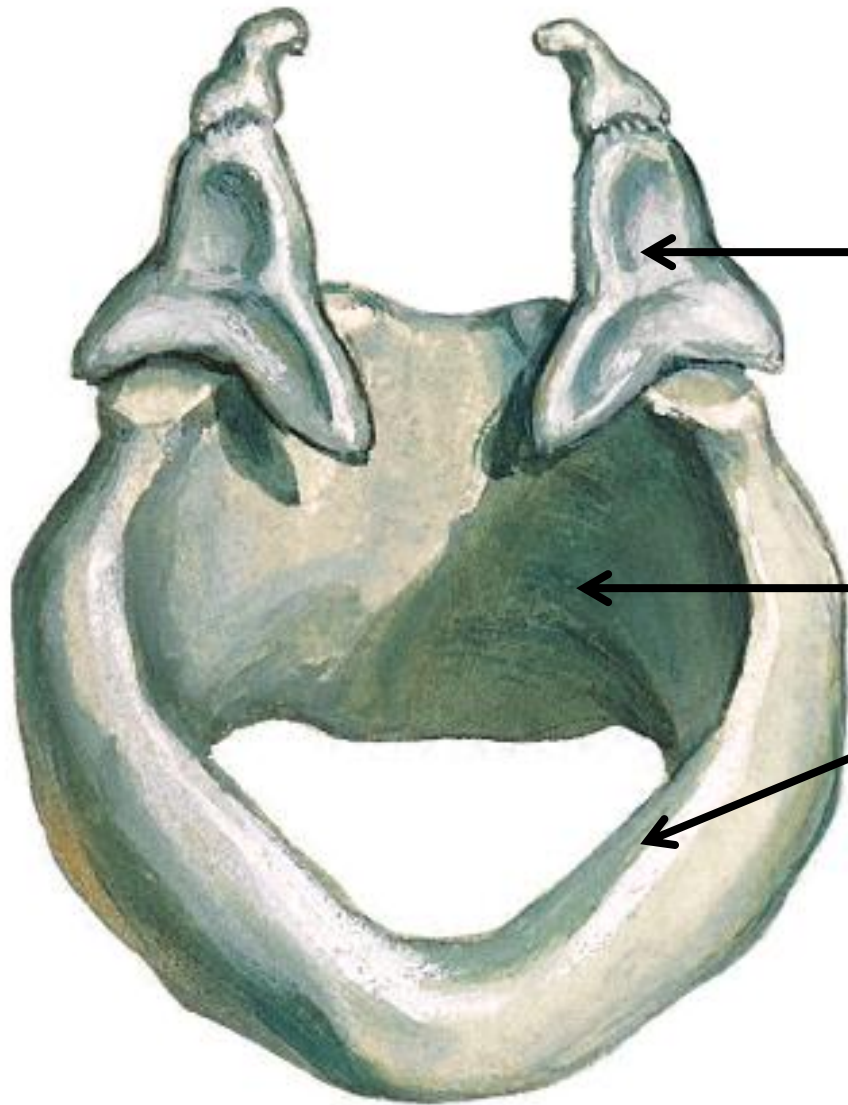
Thyroid cartilage

Arytenoid cartilage

Cricoid cartilage

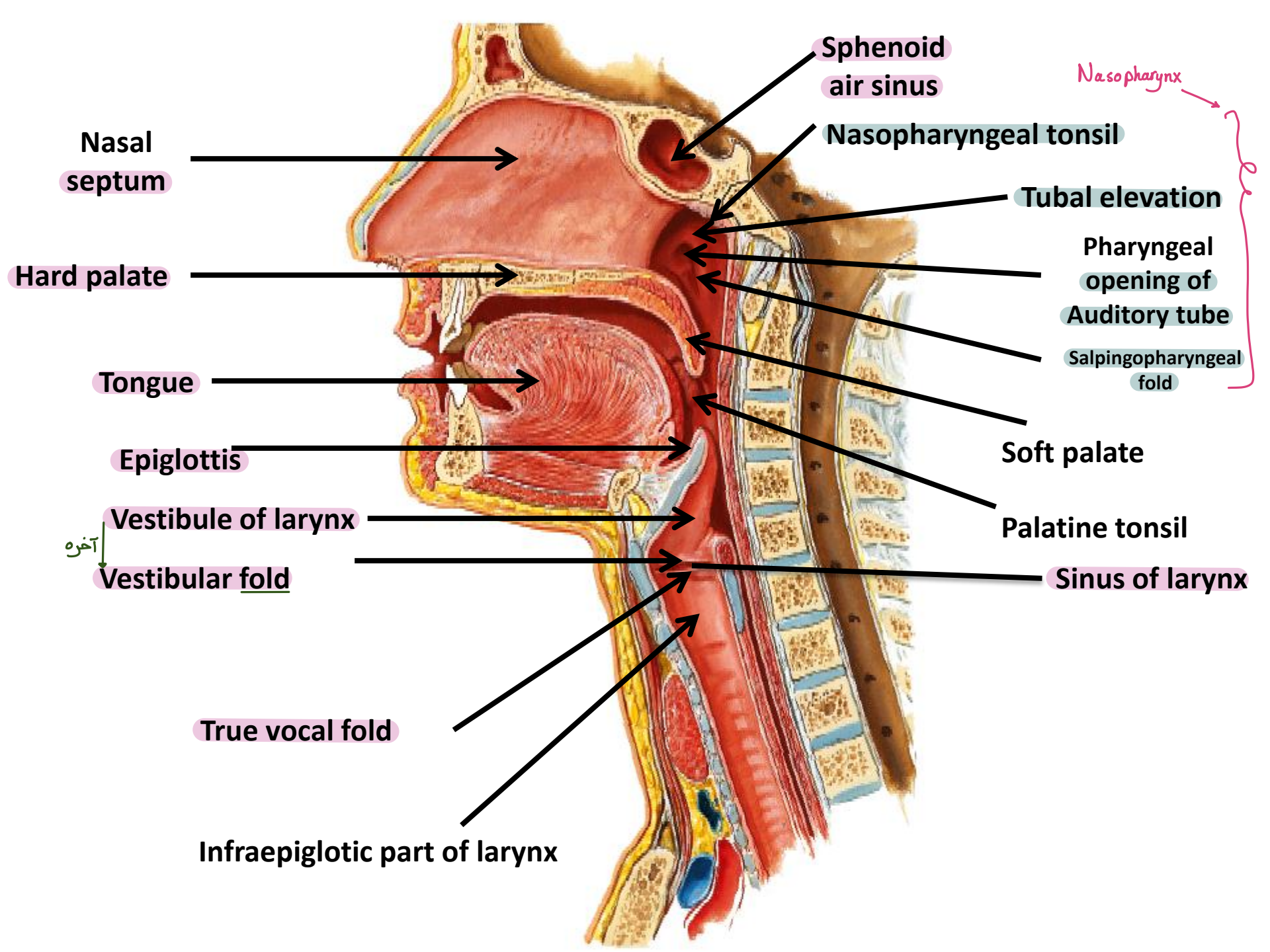
Trachea

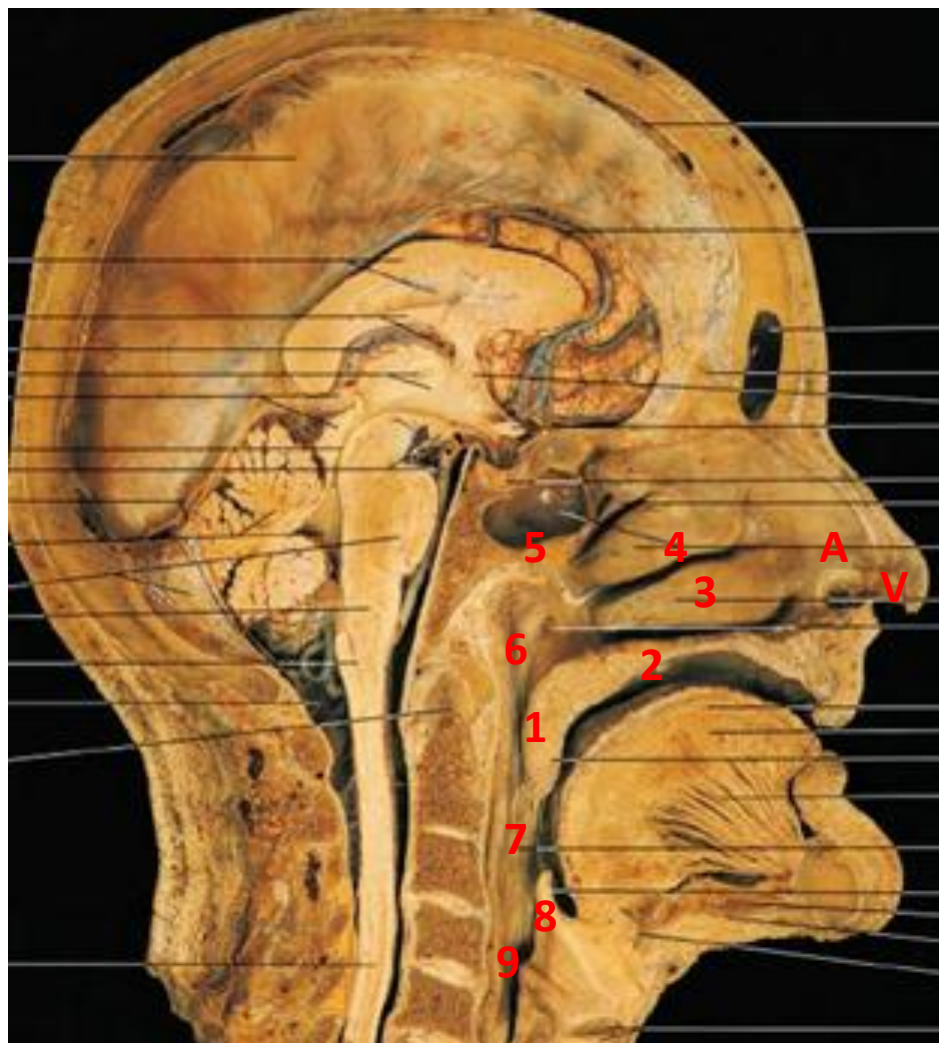
Posterior view larynx and trachea



Arytenoid
cartilage

Cricoid cartilage
"signet ring appearance"





1- soft palate

2- hard palate

3- inferior concha

4- middle concha

5- body of sphenoid and sphenoid air sinus

6- nasopharynx → nasal cavity ورا tube

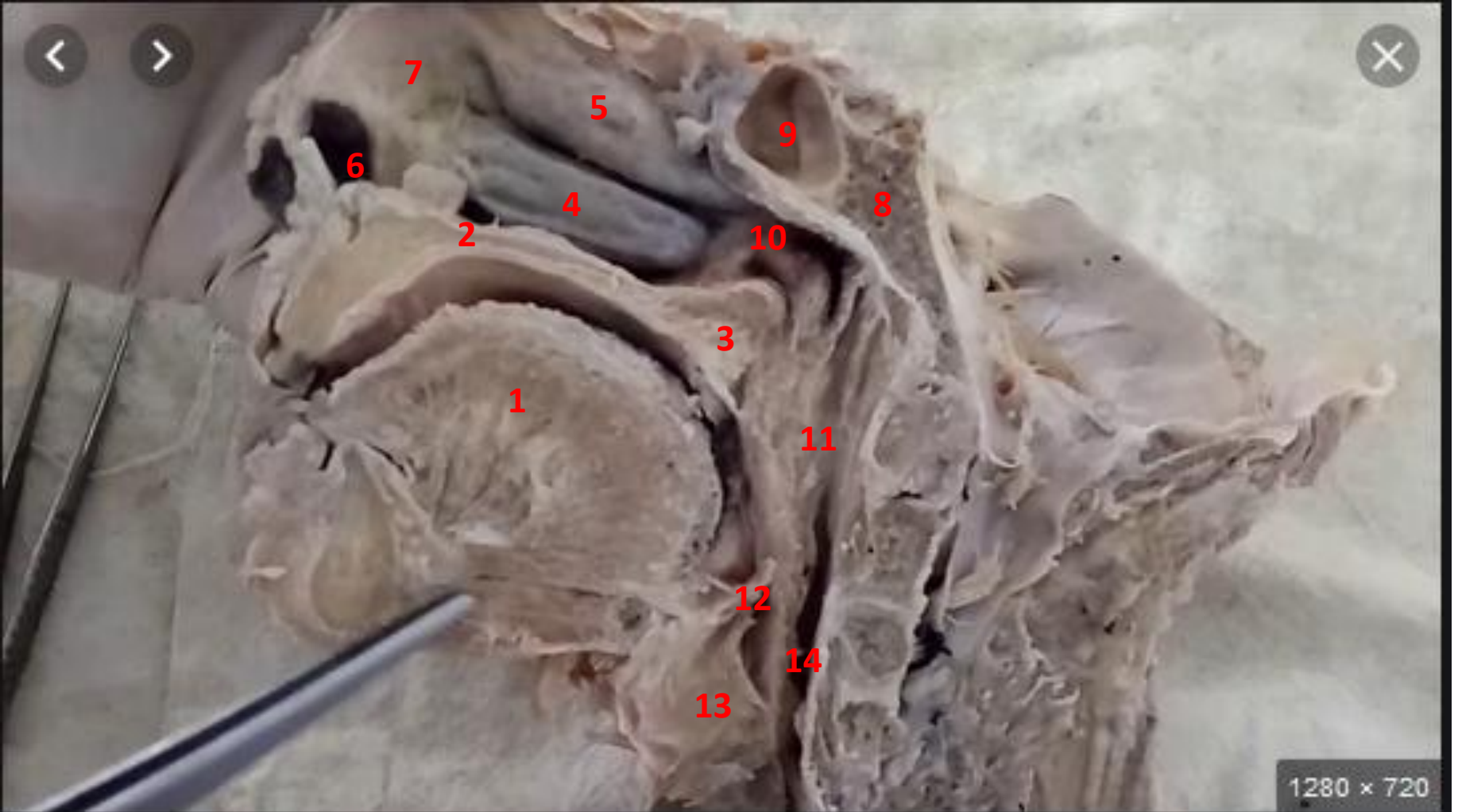
7- oropharynx → oral cavity ورا

8- epiglottis

9- laryngopharynx

V= Vestibule of the nose

A= Atrium of middle meatus



**1- mouth cavity
contain the tongue**

2- hard palate

3- soft palate

4- inferior concha

5- Middle concha

**6- vestibule of
nose**

**7- Atrium of
middle meatus**

**8- body of
sphenoid bone**

9- sphenoid air sinus

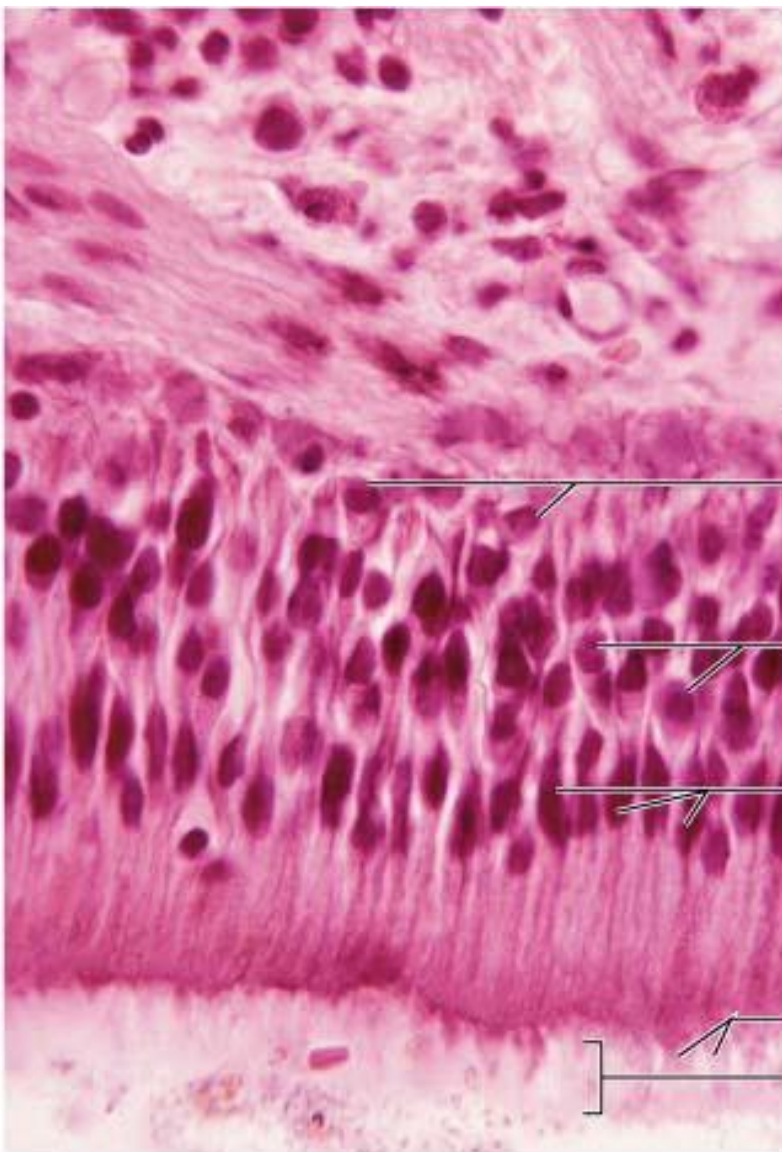
10- nasopharynx

11- oropharynx

12- epiglottis

13- vestibule of larynx

14- laryngopharynx



Connective tissue فيها

Lamina propria

دائرية

Basal cell nuclei

مسؤولة عن الشم

Olfactory receptor cell nuclei in roof

Supporting cell nuclei Long tidal

Olfactory hairs

Mucus

b

Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition*: <http://www.accessmedicine.com>

Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

- **Olfactory epithelium:** نفس القاعدة يلي حكيانها، لكن هنا الـ columnar cells صار لها differentiation into 3 types of cells

Thick pseudo stratified epithelium Columnar Ciliated with goblet cell
 formed of three types of cells:

- (a) **Sustentacular (supporting) cells**
- (b) **Olfactory (chemoreceptor) cells** ← التي بالأسفل
- (c) **Basal (stem) cells**
 التي من lamina propria

OLFACTORY EPITHELIUM

↳ PSEUDOSTRATIFIED CILIATED
COLUMNAR CELLS

↳ olfactory, sustentacular, & basal cells

↳ lined with **OLFACTORY RECEPTORS**



LARYNX



EPIGLOTTIS

VESTIBULAR FOLDS
(FALSE VOCAL CORDS)

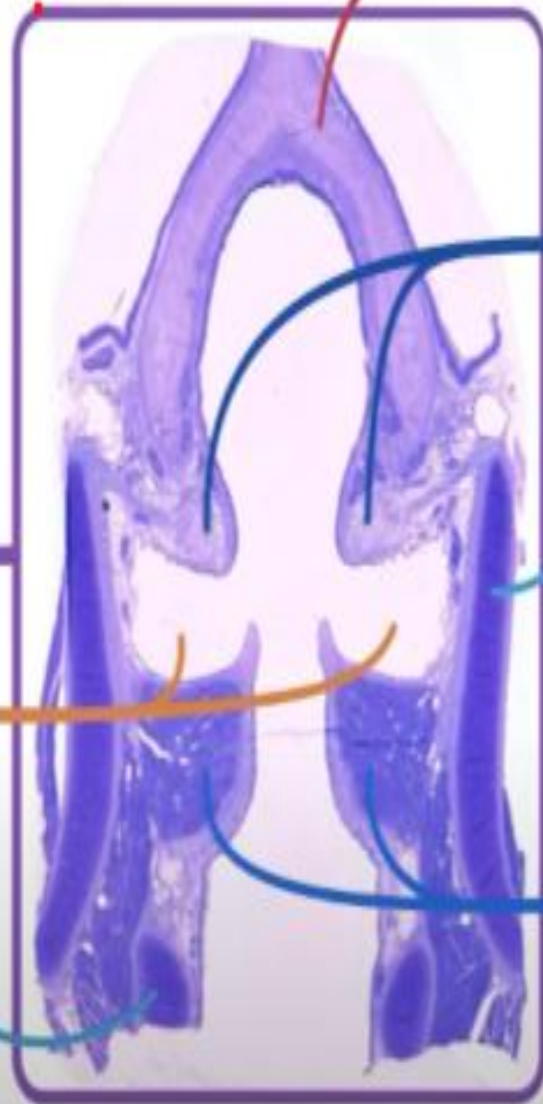
THYROID CARTILAGE

VENTRICLES

VOCAL FOLDS
(TRUE VOCAL CORDS)

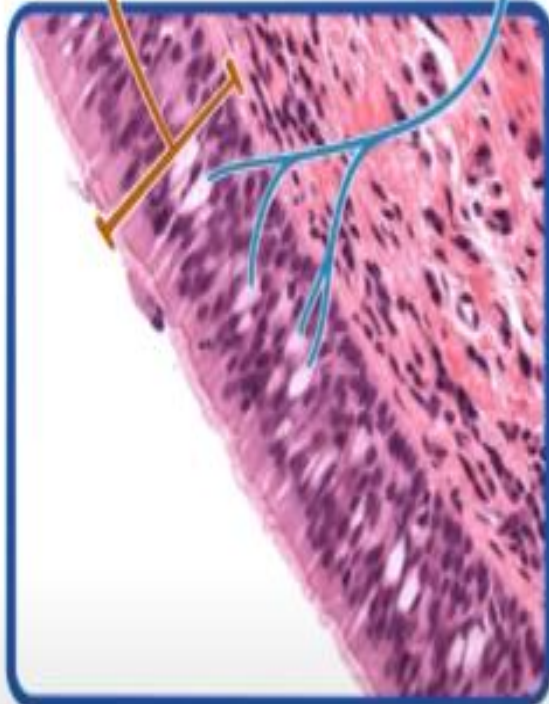
CRICOID CARTILAGE

VOCALIS MUSCLES
are STAINED DARKER



UPPER VESTIBULAR FOLD

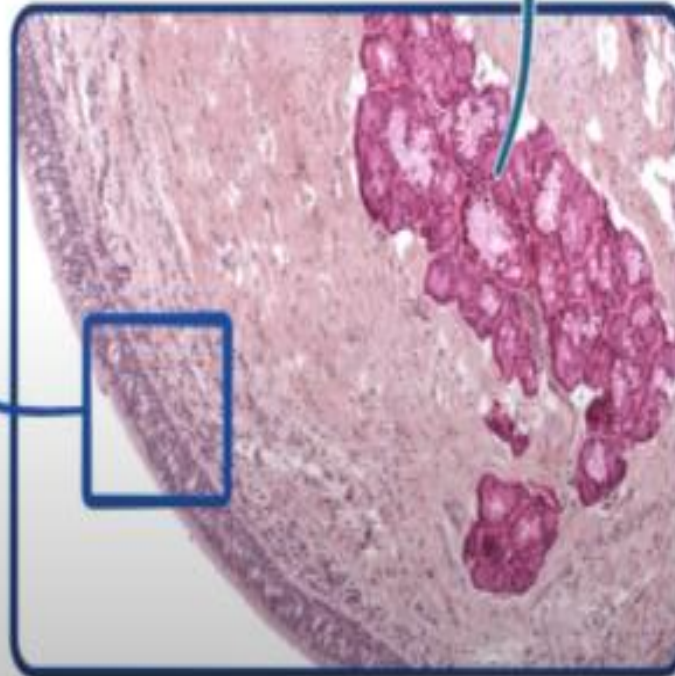
PSEUDOSTRATIFIED CILIATED EPITHELIUM with GOBLET CELLS



RESPIRATORY EPITHELIUM

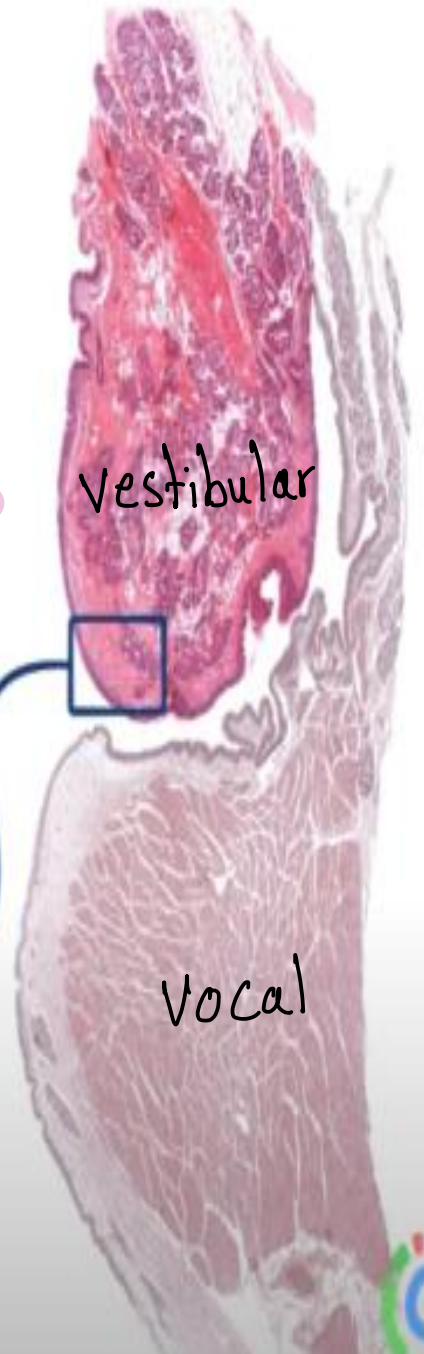
may also have PATCHES of STRATIFIED SQUAMOUS EPITHELIUM

SEROMUCOUS GLANDS



Vestibular

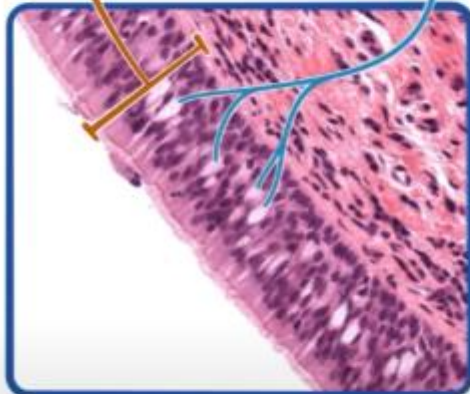
Vocal



i

UPPER VESTIBULAR FOLD

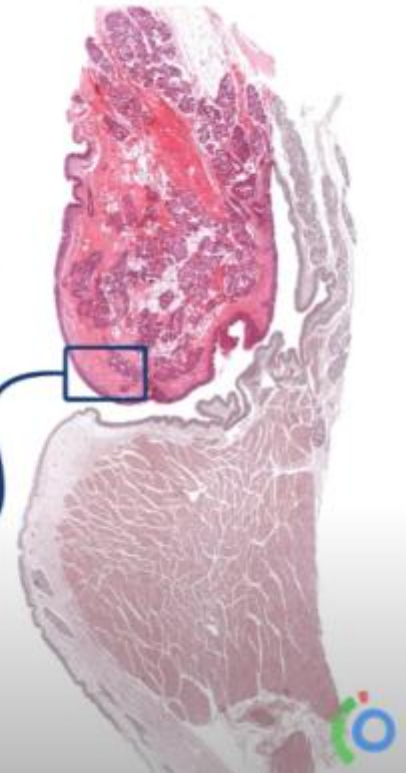
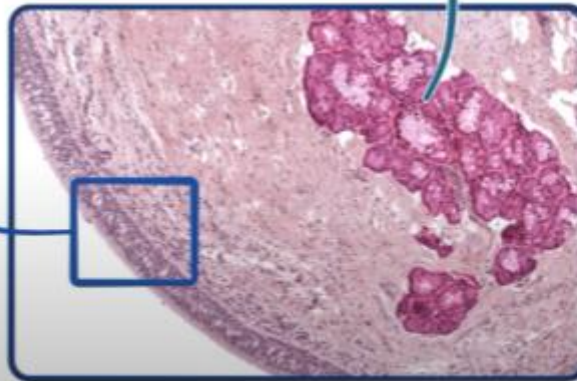
PSEUDOSTRATIFIED CILIATED EPITHELIUM with GOBLET CELLS



RESPIRATORY EPITHELIUM

may also have PATCHES of STRATIFIED SQUAMOUS EPITHELIUM

SEROMUCOUS GLANDS



#الاستثناءات يلي ما بيكونو :pseudo stratified columnar epithelium with goblet cell

1-the vestibule of the nose → stratified squamous keratinized epithelium

2-vocal cords

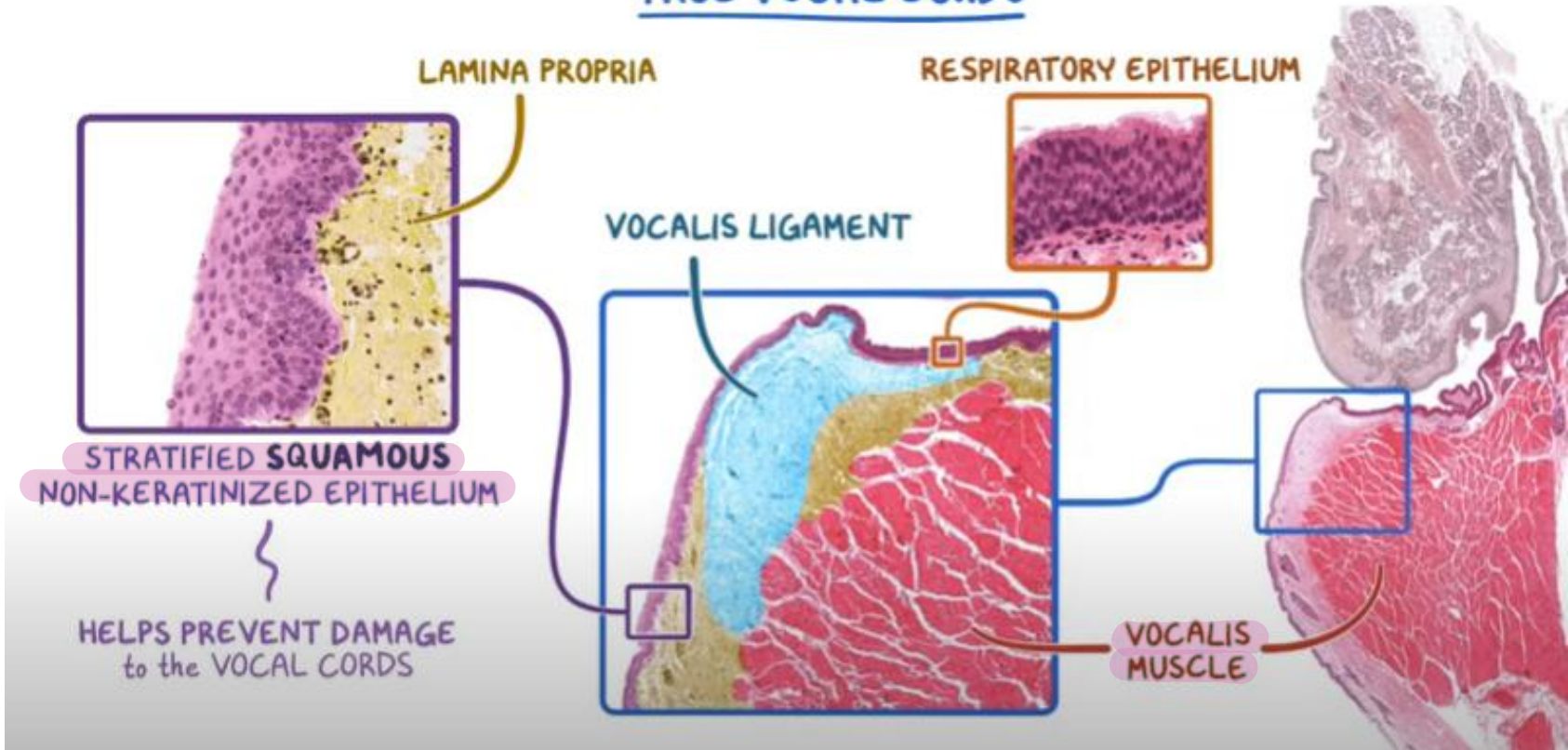
3-anterior surface of epiglottis

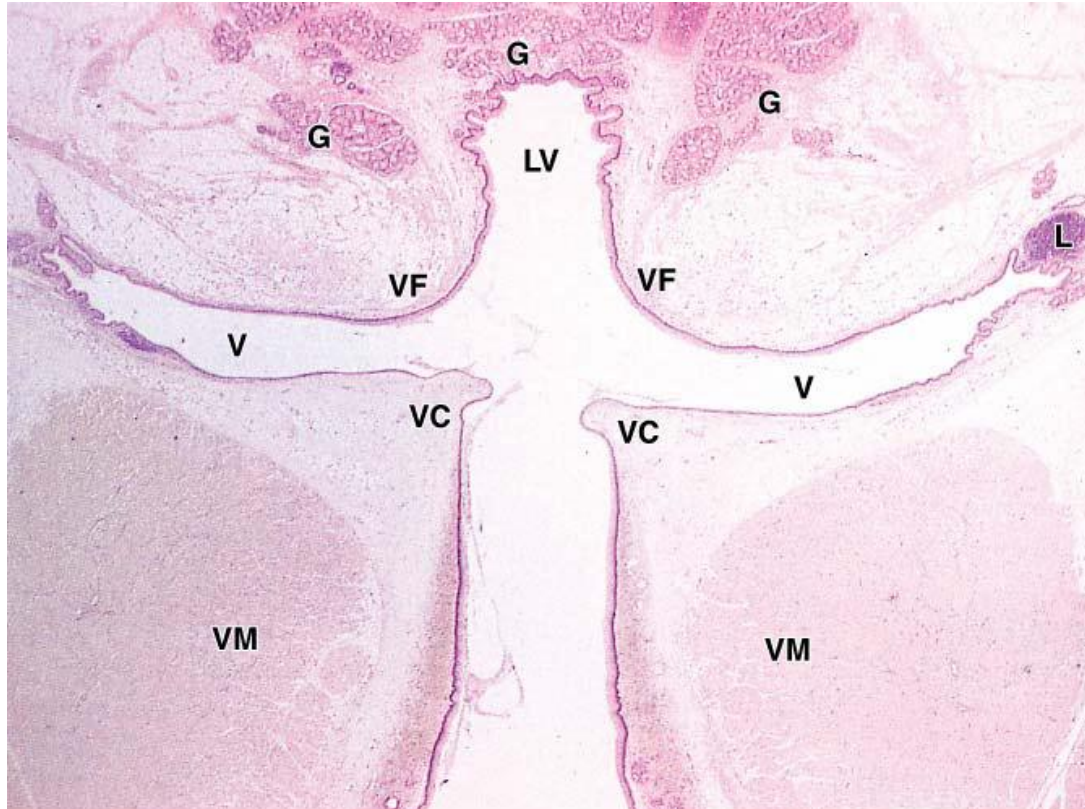
4-the upper part of posterior surface of epiglottis

Stratified squamous non keratinized epithelium

حسه احفظوهم

TRUE VOCAL CORDS



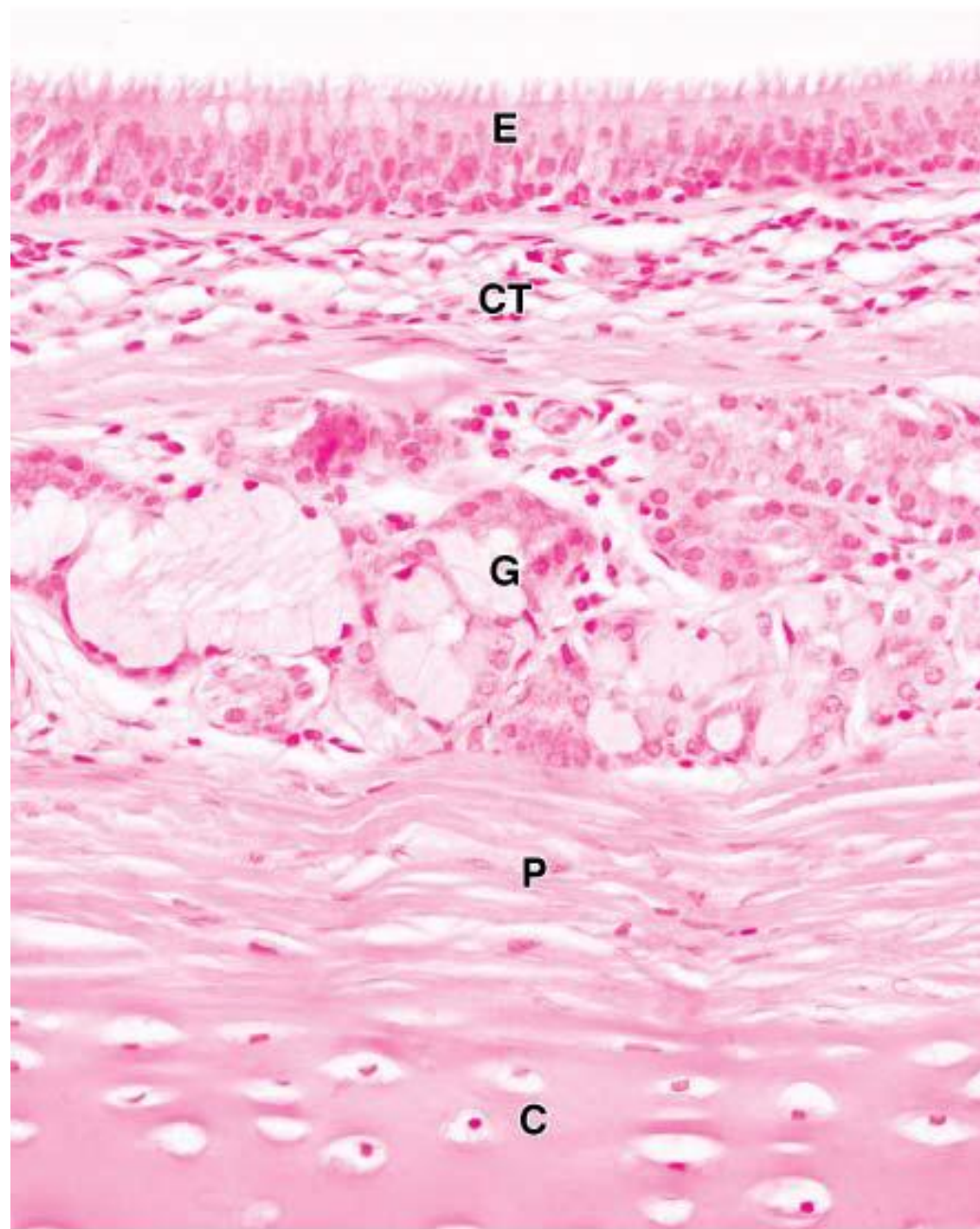


Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition*: <http://www.accessmedicine.com>
Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

The low-power micrograph shows the upper laryngeal vestibule (LV), which is surrounded by seromucous glands (G). The lateral walls of this region bulge as a pair of broad folds, the vestibular folds (VF). These contain seromucous glands, often with lymphoid nodules (L) and are largely covered by respiratory epithelium, with regions near the epiglottis having stratified squamous epithelium. Below each large vestibular fold is a narrow space or ventricle (V), below which is another pair of lateral folds, the vocal folds or cords (VC). These are covered by stratified squamous epithelium and project more sharply into the lumen, defining the rim of the opening into the larynx itself. Each contains a large striated vocalis muscle (VM)

Histology of trachea

The wall of the trachea is lined by typical respiratory epithelium (E) underlying connective tissue (CT) and seromucous glands (G) in the lamina propria. The submucosa contains C-shaped rings of hyaline cartilage (C) covered by perichondrium (P).



Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition*: <http://www.accessmedicine.com>

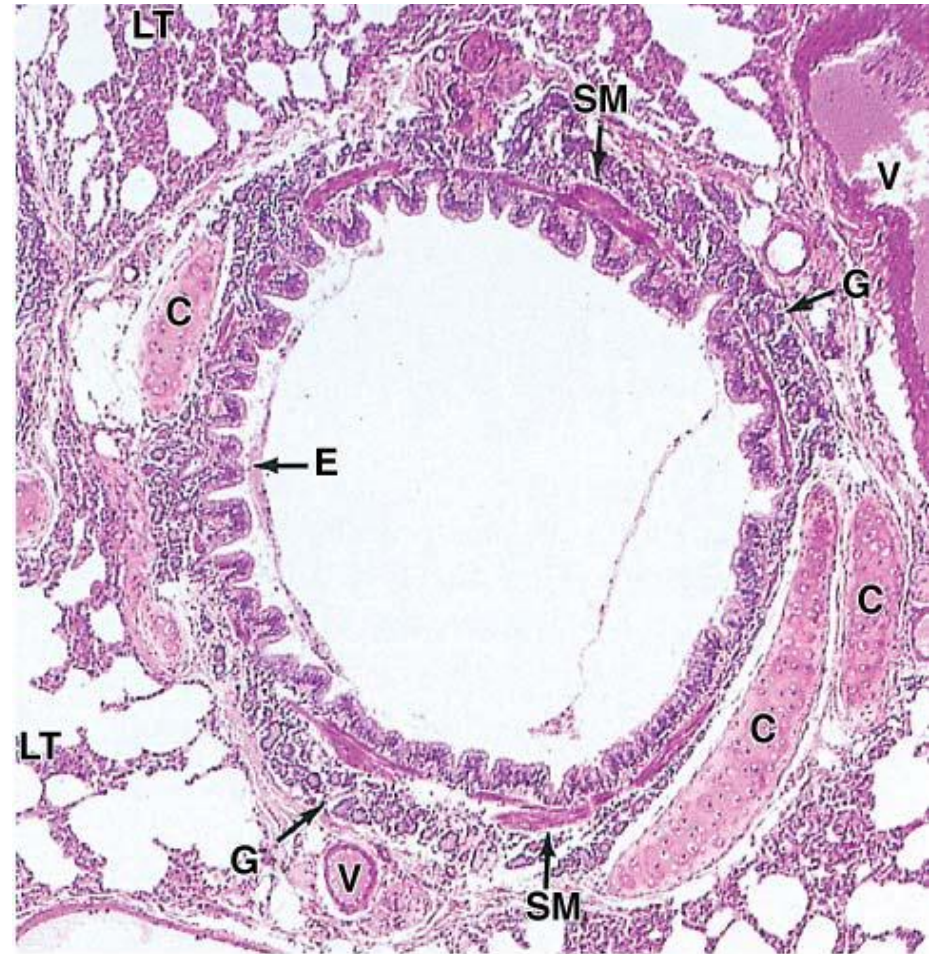
Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

Histology of bronchial tree

Bronchi (primary, secondary, tertiary)

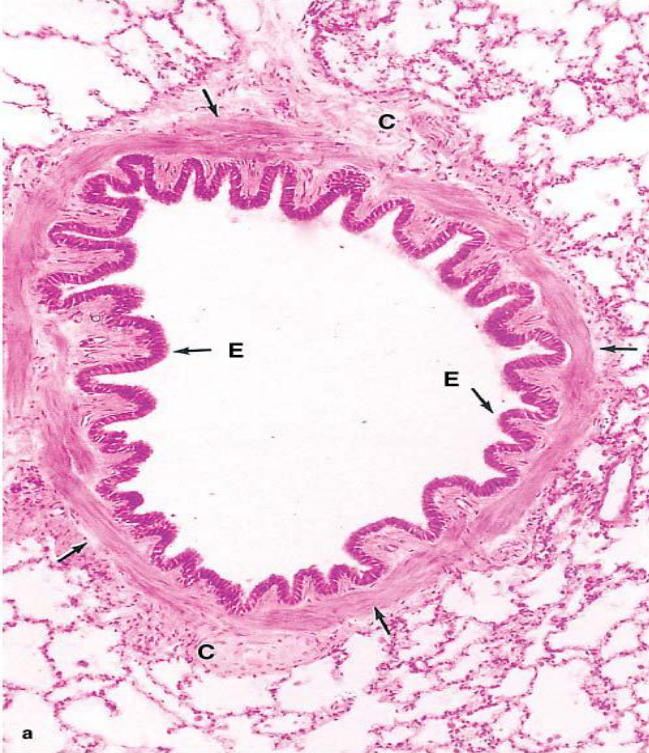
- Each primary bronchus branches repeatedly, with each branch becoming progressively smaller until it reaches a diameter of about 5 mm. The mucosa of the larger bronchi is structurally similar to the tracheal mucosa except for the organization of cartilage and smooth muscle.

In the primary bronchi most cartilage rings completely encircle the lumen, but as the bronchial diameter decreases, cartilage rings are gradually replaced with isolated plates of hyaline cartilage. Abundant mucous and **serous glands** are also present, with ducts opening into the bronchial lumen. In the bronchial lamina propria is a layer of crisscrossing bundles of spirally arranged smooth muscle which become more prominent in the smaller bronchial branches.

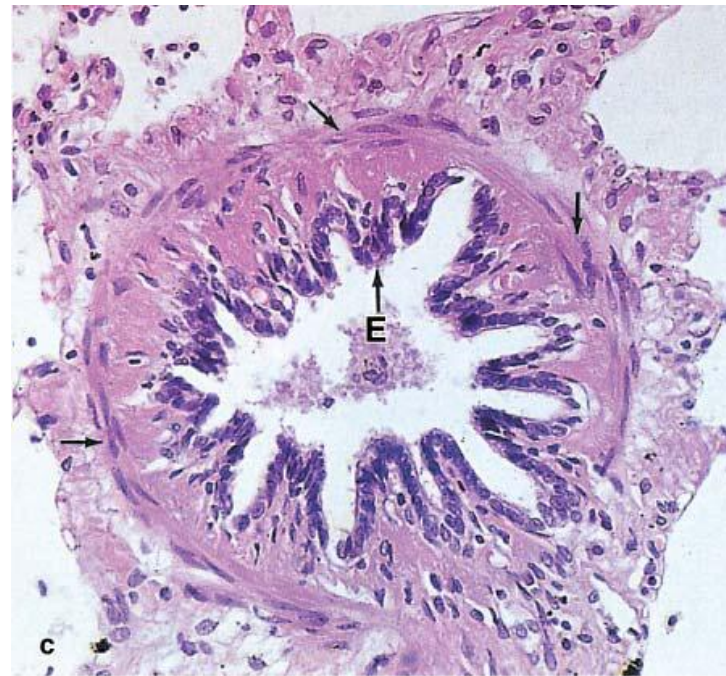


Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition*: <http://www.accessmedicine.com>

Copyright © The McGraw-Hill Companies, Inc. All rights reserved.



Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition*: <http://www.accessmedicine.com>
 Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

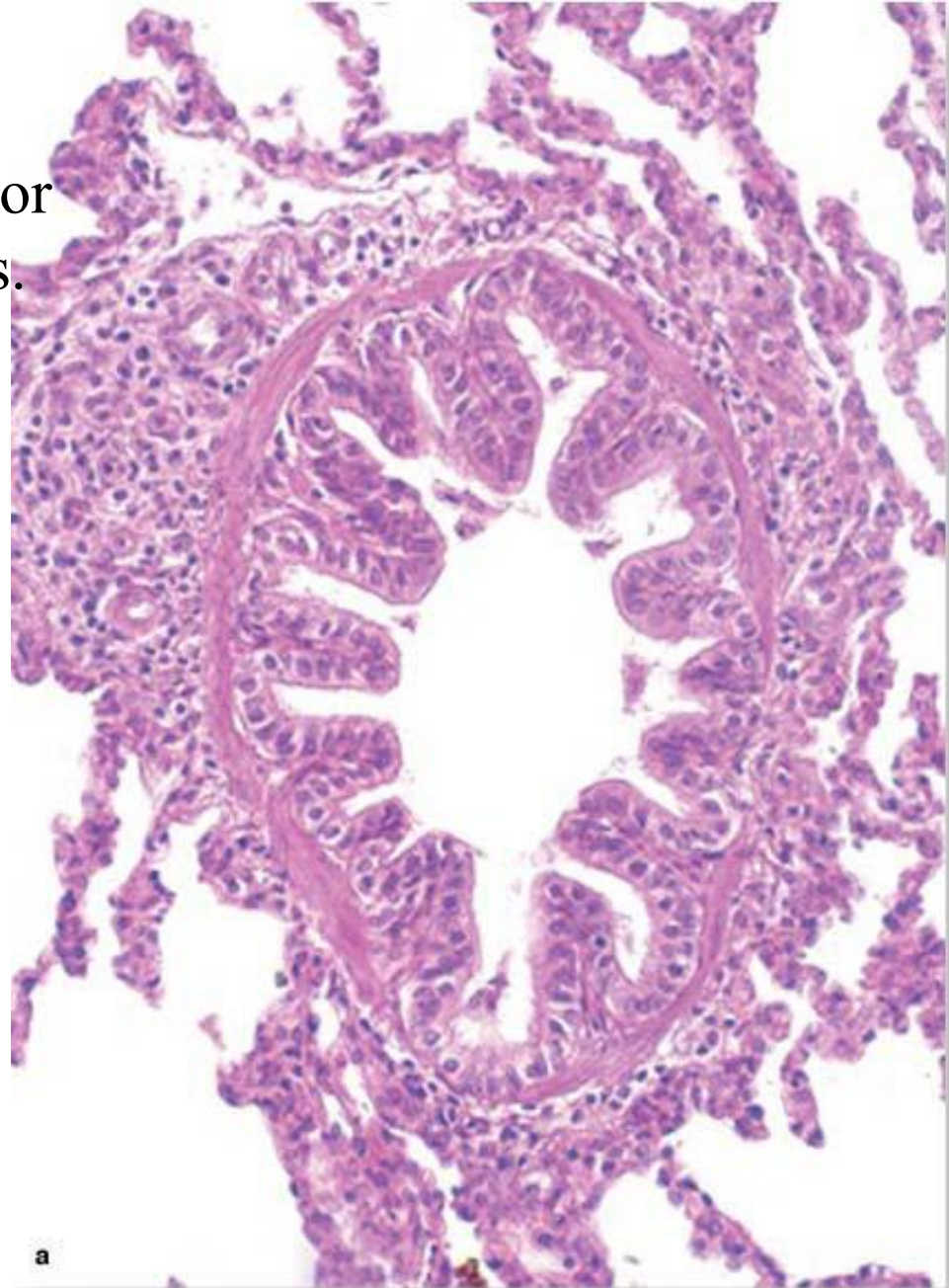


Source: Mescher AL: *Junqueira's Basic Histology: Text and Atlas, 12th Edition*: <http://www.accessmedicine.com>
 Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

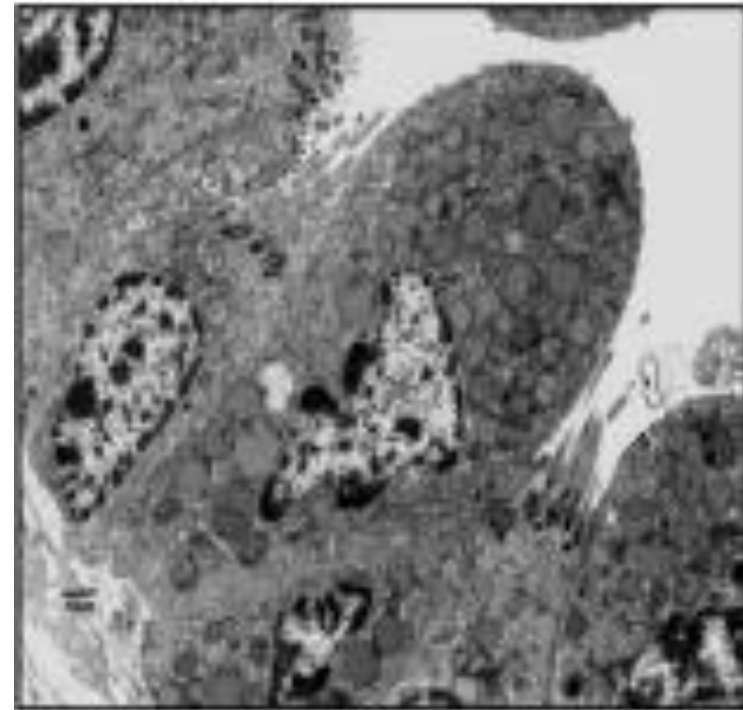
(a): A large bronchiole has the characteristically folded respiratory epithelium (E) and prominent smooth muscle (arrows), but is supported only by fibrous connective tissue (C) with no glands. **(c):** In very small bronchioles the epithelium (E) is reduced to simple low columnar and the several layers of smooth muscle cells (arrows) comprise a high proportion of the wall.

terminal bronchiole has only one or two layers of smooth muscle cells. The epithelium contains ciliated **cuboidal cells** and many low columnar nonciliated cells (clara cells).

respiratory part
رجل داخل
Cuboidal ← Columnar



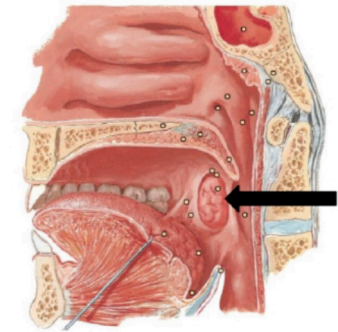
- **Clara cell Site:** Present in terminal bronchioles. It is scattered between ciliated cells. - L/M: it is a tall, **non ciliated dome-shaped cell.** - E/M: numerous mitochondria, rER, well developed Golgi and apical electron dense secretory granules. It shows short blunt microvilli
- **Function:** Secrete serous secretion rich in **protein which has anti-inflammatory function.**



كم سؤال عالسريع...

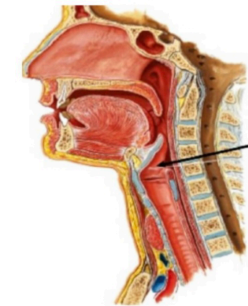
The structure marked by the arrow is ?

- A) pharyngeal tonsil
- B) laryngeal tonsil
- C) palatine tonsil
- D) tubal tonsil
- E) none of the above



The structure demarcated by black arrow is which one of the followings ?

- A) vestibule of larynx
- B) epiglottis
- C) trachea
- D) thyroid cartilage
- E) soft palate



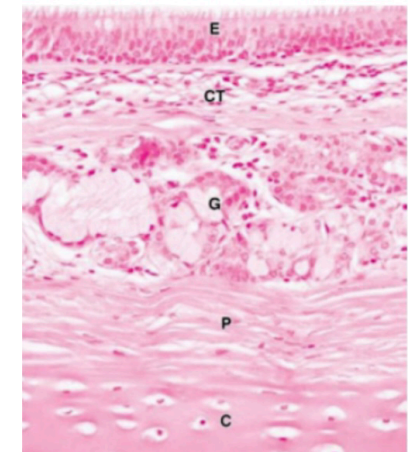
The marked structure drains into?

- A) bulls ethmoidalis
- B) anterior part of hiatus semi lunaris
- C) spheno ethmoidal reces
- D) infundibulum
- E) naso lacrimal duct



The following picture represents which part of the respiratory system?

- A) terminal bronchiole
- B) larynx
- C) primary bronchi
- D) nasal cavity
- E) trachea



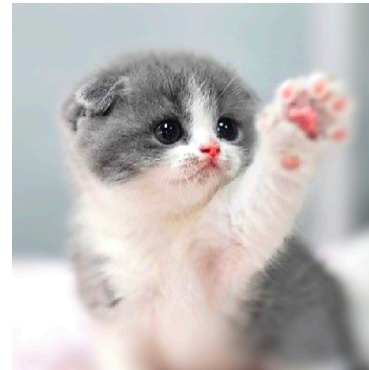
Answers

C

A

C

E



بالتوفيق...♥

dana